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A.D. 1896. Feb. 18. N° 3724.

RICKARD'S Complete Specification. (1 SHEET)

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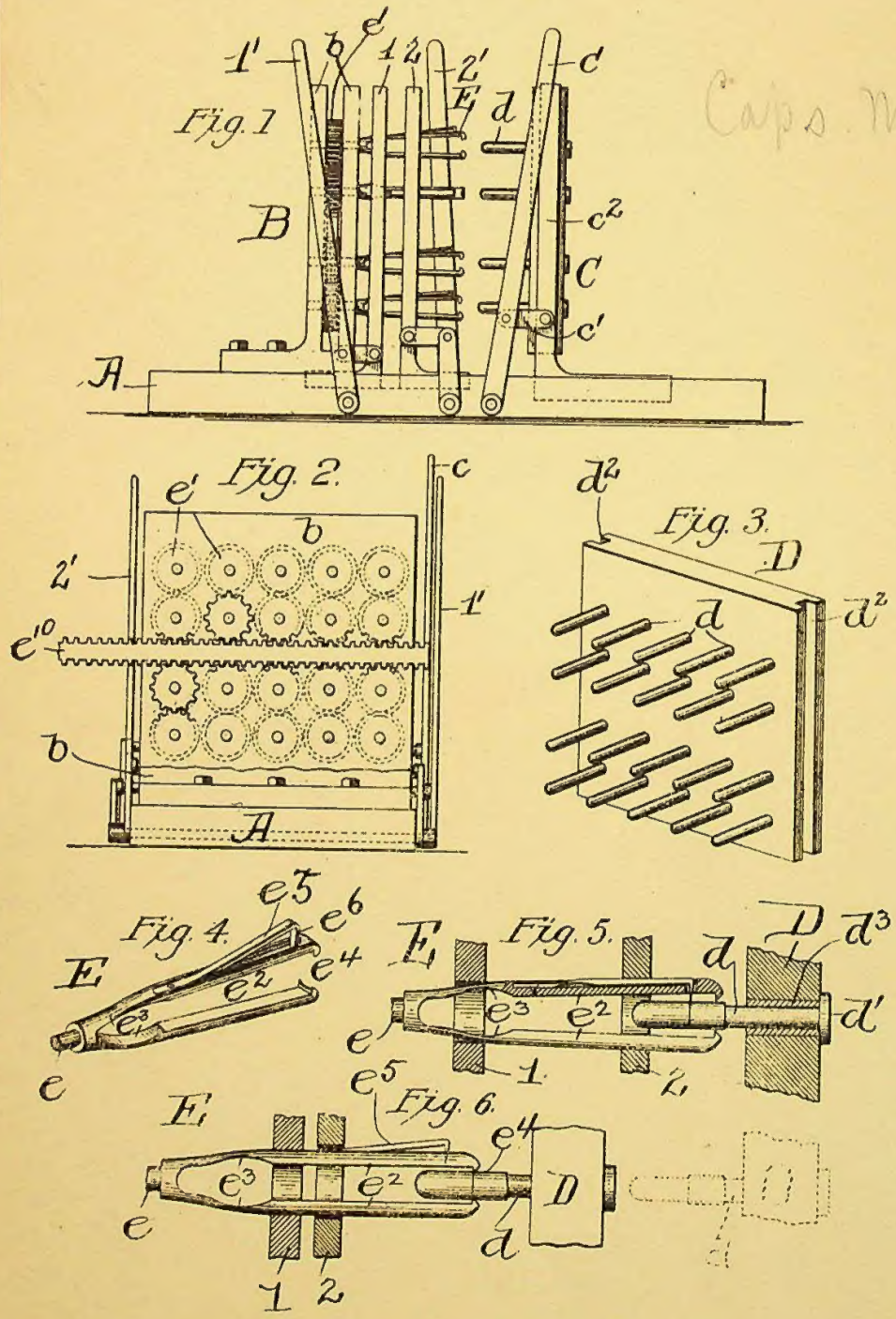

[This Drawing is a reproduction of the Original on a reduced scale]

London: Printed by Darling and Son Ld.
for Her Majesty's Stationery Office. 1896.

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~~SURGERY.~~
~~Capsule Machines.~~

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N° 3724 A.D. 1896

DUPLICATE

Date of Application, 18th Feb., 1896—Accepted, 21st Mar., 1896

COMPLETE SPECIFICATION.

Improvements in Capsule Machines.

I SIDNEY ALONZO RICKARD Chemist, of 622 North Broadway, in the City of Saratoga Springs, State of New York, United States of America, do hereby declare the nature of this invention and in what manner the same is to be performed, to be particularly described and ascertained in and by the following statement :—

My invention relates to machines for cutting off gelatine capsules to the length desired while on the molds, and the object of my invention is to provide improvements whereby the capsules are not only separated at the proper point from the ends known as the "burrs," but both capsules and burrs are automatically stripped from the molds by the operation of the machine, thus leaving the mold plate ready for another dipping as soon as removed from its temporary place in the machine.

My invention consists in the construction and combination of parts substantially as hereinafter described and claimed.

In the accompanying drawings,

Figure 1, is a side elevation of the machine.

Figure 2, is an end elevation from the left of Figure 1, one of the standard plates being broken away.

Figure 3, is a perspective view of a portion of the mold plate.

Figure 4, is a perspective view of one of the combined cutters and strippers.

Figure 5, is a detail view partly in section illustrating the position of the contractors or guide plates during one stage of the operation of the machine.

Figure 6, is a view similar to Figure 5, but showing the said plates in another position.

Similar reference characters are used in all the views to designate similar parts.

A suitable base plate A, is provided at one end with a rigid standard B, formed in two parts or plates *b*, *b*, and opposite said standard with ways for a frame C, which is movable toward and from said standard by means of a lever *c*, connected to a rock shaft passing through the base A, and having an arm at its other end, the said lever and arm being connected to the frame C, near its bottom by means of the links e^1.

The two uprights c^2 of the frame are adapted to receive between them the mold plate D, which is grooved at its edges, as at d^2, to receive said uprights, the mold plate being therefore readily removable vertically from the frame. This plate D is provided with a number of molds, *d*, which are fitted to suitable holes in the plate so as to project from the face thereof as shown. These molds are made of glass or other equivalent vitreous material and are each provided with an enlargement or head d^1, at one end to properly locate or stop the mold when it is inserted in the plate. A bushing d^3 of suitable material, such as rubber, may be employed as shown in Figure 5, to aid in holding each mold in the plate and yet permit it to be removed and a new one inserted if any breakage should occur. The bushing also holds the mold with sufficient elasticity to reduce the liability of breakage.

The standard B, is provided with bearings in its two plates *b*, *b*, for the spindles *e*

[*Price 8d.*]

of the combined cutters and strippers E, there being as many of the latter as there are molds *d*. Each spindle is provided with a pinion e^1 between the standard plates *b*, *b*, and the pinions intermesh with each other or with a sliding rack e^{10}, whereby the spindles may be rotated. In practice, the rack may be connected to any suitable operating gear.

On the inner end of each spindle is the spring fork e^2, having the inclines or cam surfaces e^3 and provided at the extreme end with the inwardly bent claws e^4. One arm of the fork has secured to it a spring steel strip e^5, having its end bent downward and sharpened to form a pointed knife or cutter e^6, which is adapted to be pressed through a hole e^7 in the fork arm. This strip e^5 normally stands inclined outward from the fork to hold the point of the knife just within the hole e^7, as shown in Figs. 1 and 4.

Fitted to slide in suitable ways on the base A, are two uprights 1 and 2, which I term contractors for the reason that suitable holes therein serve to contract the arms of the fork and the knife on the mold. These plates are reciprocated by suitable levers 1^1 and 2^1 respectively through the medium of rock shafts and links in a manner similar to the lever *c* and links c^1 for the frame C.

These plates 1 and 2 are provided with round holes, one for each of the forks e^2, which pass through and are to be rotated within said holes.

The operation is as follows:

A plate D, having been placed so as to dip the glass molds in the gelatine in the usual manner, and the latter having been dried sufficiently to form the shells on the molds, the said plate is then placed in the frame C, as shown in Figure 1. The frame C, is then moved so as to insert the molds between the forks e^2 to the desired distance. Then the contractor plate 2 is moved toward the molds and the walls of the holes of said plate press the knives e^6 down until they cut through the gelatine to the glass (see Figure 5). The spindles *e* are now rotated to carry the knives around the molds to cut the shells and sever the capsules from the burrs. Rotation of the spindles is then stopped, plate 2 is moved back and plate 1, is advanced, as shown in Figure 6, thus releasing the knives and causing the claws e^4, owing to the walls of the holes in plate 1, acting on the inclines e^3, to grasp the burrs on the molds. Finally the frame C, is withdrawn to the position indicated by the dotted lines in Figure 6, and in so doing the molds are stripped of the capsules and burrs, which then fall to the base or to any suitable receptacle from which they may be removed to any suitable separator.

The mold plate is then ready for another dipping; but before said mold plate or another one is placed in the frame C, and advanced, the plate 1, is moved back to the position shown in Figure 1.

The length of the finished capsules is determined by the distance to which the molds are inserted between the forks e^2.

The glass molds are preferable to the metallic ones commonly used in the art, in that the knives are less liable to be dulled by the cutting action against them, and the molds themselves are not roughened by the action of the knives.

Owing to the location of the claws at a point nearer the mold plate than the knives, the said claws grasp the burrs and cause them to be removed from the molds with the capsules, thus avoiding the necessity of stripping the burrs by hand after removing the mold plate from the frame. It will be understood that the lever *c*, may first be operated so, as to withdraw the molds only enough to strip the capsules, and when the latter have been gathered up, then further movement of said lever will cause the stripping of the burrs.

The machine illustrated in the drawings is adapted to cut and strip but a limited number of capsules, but it is to be understood, that, in practice, the number of molds and combined cutters and strippers will greatly exceed the number illustrated here, the capacity being limited only by what may be a convenient size of mold plate to handle, or the number of spindles that can readily be intergeared and rotated.

Having now particularly described and ascertained the nature of my said invention, and in what manner the same is to be performed, I declare that what I claim is :—

1. In a capsule machine, the combination with a plate having a series of holes provided with molds of vitreous material, of a series of rotatable knives adapted to cut the gelatine on said molds.

2. In a capsule machine, the combination with the movable mold plate, of a standard having a series of rotatable spindles each having a forked stripper and a knife, and means for contracting the knives and the strippers against the molds.

3. In a capsule machine, the combination with the standard B, of the spindle *e*, mounted therein and geared together, the forks e^2, having claws e^4 and knives e^6, the frame C, movable toward and from the standard, and the plate D, having a series of glass molds *d*, substantially as described.

4. A capsule machine comprising in its construction a mold and a rotatable cutter and stripper therefor, said cutter and stripper consisting of a spring fork, having claws and a spring strip having a knife at one end and secured by its other end to one of the arms of the fork.

5. A capsule machine, comprising in its construction a standard carrying a series of cutters and strippers each consisting of a rotary spring fork having claws and a spring strip carried by one of the arms of said fork and having a knife at its end, a movable plate carrying a series of molds, and two plates movable in the space between the standard and mold plate and having openings through which the cutters and strippers extend, substantially as and for the purpose set forth.

Dated this 18th day of February 1896.

WHEATLEY & MACKENZIE,
40 Chancery Lane, London, W.C., Agents.

London : Printed for Her Majesty's Stationery Office, by Darling & Son, Ltd.—1896